

It has a remarkable analogy to the singular vesicular development of the cement-tissue of the peduncle of *Lepas* (*Dosima fascicularis*, Sol. & Ellis\*.

The byssus in the Acepala is generally corneous; but in *Anomia* it forms a calcareous plate (the plug), possibly corresponding with the opercular valve in *Hipponyx* and *Lithedaphus*, which may be considered a calcareous secretion of the ventral face of the foot. The epiphragm of the *Helices* would also be homologous, if this plate be really a secretion of the foot, as M. P. Fischer states; but it is probably secreted by the mantle, like the septa of *Vermeti*, *Runcina decollata*, &c. To this category belong probably the tubes of *Teredo*, *Gastrochena*, *Clavagella*, &c., and the accessorial valves of *Pholades*. The two pallets in *Teredo*, which have a striking analogy to the opercula of some *Serpula* (*Hydroides norvegica*, Gunn.), might perhaps be compared with the posterior supplementary shells of *Talona*.

The shell of *Argonauta*, considered by Mr. Adams to be homologous with the egg-cases of *Murex*, agrees with *Nautilus* in its position and the black colour of the carina; but it seems to be formed by the arms only. Its homology is therefore uncertain. It appears that all parts of the skin in Mollusca can secrete a shell. There are likewise found calcareous spicula or grains in all parts of the body, in the clypeus in Gymnobranchia, the tentacula of *Pleurobranchus*, and even in the intestinal channel. In the *Bullidæ* and some Pellibranchiata there are thick calcareous plates in the stomach.

*Note.* The ligament is a thickening of the epidermis, which is part of the skin of the animal, but not specially of the shell. This seems evident to me from examining, for instance, a specimen of *Mya truncata* in spirit. The connexion of the two valves by the ligament proves, therefore, not that the valves were originally one only, but that the bivalve shell is formed in the same manner as the two lateral mandibles of the *Æolidæ*.

#### XIV.—Notes on some *Amphibians*.

By JOHN HOGG, M.A., F.R.S., F.L.S. &c.

DR. J. E. GRAY, in his paper "On the Clawed Toads (*Dactylethra*) of Africa," published in the 'Annals and Magazine of Natural History' (vol. xv. p. 334), well observes, that this kind has "large webbed hinder feet, some of the toes of which are armed with very distinct horny black claws—a peculiarity of structure that is quite an exception amongst the Batrachian animals."

\* Darwin's 'Cirripeds,' p. 96.

Cuvier, in the second edition of his 'Règne Animal' (1829), bestowed the generic name of *Dactylethra* on the only one then known, which had been discovered in South Africa, and which is now called *D. capensis*.

The Greek appellation of the genus, *δακτυλίθρα*, properly means a "case" or "sheath for the finger," *i. e.* a *thimble*; and it is clearly a very correct one for the sort of *horny case* which covers *three* of the five toes of this curious animal. Dr. Gray describes it as a "black horny claw, which covers the last joint of the three outer toes and the spur of the hind foot."

The same zoologist further describes this Toad as having its skin "scattered with small white lines disposed in a symmetrical manner, which, when examined by a magnifier of rather high power, display linear series of close minute perforations or glandular openings."

These small perforations or pores are probably of use in exuding, under a dry and hot atmosphere, a fluid that is serviceable in moistening the naked skin, which, in several species of Frog, is known to perform the function of breathing. This cutaneous respiration possessed by some of the Amphibians was, I believe, first made known by Dr. Edwards, in Paris, more than a quarter of a century ago; but how far that function may assist, or be employed in lieu of, pulmonary respiration I have not been able to learn.

When I wrote my first paper on the "Classifications of the Amphibia," which was published in the 'Magazine of Natural History' (n. s. vol. iii. p. 265, 1839), I kept the genus *Dactylethra* apart from the genus *Pipa*, and took the *D. capensis* as the type of a distinct family, which I termed *Dactylethridæ*. For so doing, more than twenty-seven years since, several zoologists, whose classifications were not in accordance with mine, censured me; but I am now very happy to find that Dr. Gray has adopted (p. 340) the family "Dactylethridæ" as an established one. Although this distinguished naturalist does not assign the author to this family, yet by consulting Prof. Agassiz's 'Nomenclator Zoologicus,' it will be seen that I was the originator of it.

The entries in that useful work are as follow:—

In the 'Index Universalis' (p. 115), "Dactylethridæ, Hogg, Rept. Ad. 1838."

Again, in the 'Addenda' to 'Reptilia' (p. 3), "Dactylethridæ, Hogg, Ann. Nat. Hist. i. 1838. *Dactylethra. Pipæ.*"

And should the animal named by Dr. Gray *Silurana* prove a distinct genus, and not the larval or tadpole-state of a species of *Dactylethra*, it will constitute another interesting genus in the family Dactylethridæ.

I will now make a few remarks on the Axolotl of Mexico—named by Cuvier *Axolotus Mexicanus*, and by myself *Siredon pisciformis* (1838).

Dr. Gray, in his very useful 'Catalogue of the Specimens of Amphibia in the British Museum,' part 2, printed in 1850 (wherein he has done my labours justice), places this remarkable Amphibian in his suborder II. *Gradientia*, and family III. *Plethodontidæ*; and he says at p. 49, that it "has only been observed in its larva state." He also there cites this passage from Baird (Journ. A. N. S. Phil. 1849, p. 292):—"It (*Siredon*) so much resembles the larva of *Ambystoma punctata* in both external form and internal structure, that I cannot but believe it to be the larva of some gigantic species of this genus. It differs from all known *Perennibranchiates* (the *Manentibranchians*, mihi) in possessing the larval character of the gular or opercular flap, this being unattached to the subjacent integuments, and free to the extremity of the chin. The non-discovery of the *adult* is no argument against its existence."

Also Charles Bonaparte, Prince of Musignano, in the same year (1850), in his Classification of the Amphibia, considered the *Siredon* as the mere *tadpole* of a Salamandra or Batrachian.

Although Dr. Gray; with his usual accuracy, has referred to "*Home*, Phil. Trans. 1824," yet he seems not to have fully examined that memoir, and to have overlooked the following passage which I wrote in 1838 respecting it:—

"Latreille places the Axolotl (*Siredon pisciformis*) amongst the Caducibranchious Amphibia; but it had been *previously discovered* that its *branchiæ* are *persistent*; the details of which may be learnt from a paper by Sir Everard Home, published in the 'Philosophical Transactions' for the year 1824, p. 419. One of the accompanying plates accurately represents the external *gills* as still *remaining* on a female Axolotl when in the state of possessing fully developed *ovaria*, and just before the *ova* are shed; thereby proving her to be a *perfect* animal. Consequently Latreille should have stationed the Axolotl next to the *Proteus* in his second order." This fact has been fully confirmed; and the *permanency* of the external *gills* throughout the life of the animal is now well determined. It is frequent in the lake near the city of Mexico; and the common people considering it a *fish* (as indeed some naturalists are inclined to do), sell it as such; and, as Hernandez says, "*salubre et gratum præbet alimentum.*" There seem to me to be three or four species which are not yet correctly known or distinguished.

M. Duméril has very recently given an account of the *hatching* of the young from the *ova* of the Mexican species (*Siredon pisciformis*) in the menagerie of the Museum of Natural History

in Paris. The *ovum* is like that of all the Batrachians. The gills in the tadpole of this species consist of three short appendages, which are cylindric and only slightly ramified.

For a full description of the interesting development of the tadpole from the egg of this Amphibian, see the last April Number (16) of the 'Comptes Rendus,' tome lx. p. 765.

I may, however, note that it appears that the time required for the hatching of the tadpole of the Axolotl is about *one month*—the same as that, in our ordinary springs, for the birth of the common tadpole.

This genus was placed, in my modified Branchial Classification, in 1841, thus:—

Class IV. *AMPHIBIA*.

Subclass II. *Diplopneumena*.

Order III. MANENTIBRANCHIA.

Tribe I. RAMIBRANCHIA.

Family II. Proteidæ.

Genus SIREDON.

And I do not think it necessary for me to alter its position, even after a period of twenty-four years.

But, before I conclude, I must point out *two errors* in Prof. Agassiz's valuable 'Index Universalis.'

The *first* is in attributing to me the word *Cadnabranchia*, which I have never used. The entry at p. 56 stands thus:—

"*Cadnabranchia*, Hogg, Rept. Ad. 1838" (which he corrects to "*Caducibranchia*"). And he then inserts the following:—

"*Caducibranchia*, Bonap. Rept. 1831" (which he corrects to "*V. cadnabranchia*").

The word *Cadnabranchia* is, I conclude, only a misprint.

And the *second error* occurs at p. 310, as follows:—

"*Proteidea*, Hogg, Rept. Ad. 1841" (which he corrects to "*Proteoidæ*").

Now the term "*Proteidea*," which is seen at p. 355, Ann. & Mag. Nat. Hist.' (No. 45, July 1841), is not my own, but it is that of Prof. J. Müller: the original is published in Oken's 'Isis' (p. 710) for the year 1831; and a translation from the German, made by myself, is there inserted.

Norton House, Stockton-on-Tees.

July 11, 1865.